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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,996	02/14/2002	Caroline S. Harris	1660A1	9847

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PPG Industries, Inc.
Intellectual Property Dept.
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EXAMINER

BLACKWELL RUDASIL, GWENDOLYN A

ART UNIT	PAPER NUMBER
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1775

DATE MAILED: 09/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/075,996

Applicant(s)

HARRIS ET AL.

Examiner

Gwendolyn A. Blackwell-Rudasill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-53 is/are pending in the application.
- 4a) Of the above claim(s) 40-52 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-39 and 53 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4,5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-39 and 53, drawn to 428, classified in class 428, subclass 432.
 - II. Claims 40-52, drawn to a method of forming a coating, classified in class 427, subclass 248.1.
2. Inventions of Group II and Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). Instant case the process can be used to make a materially different product. The method claims require either that at least one of the surfaces has tin diffused therein, that the glass be made of a float glass ribbon, or the substrate be heated to a temperature over a certain range with a certain thickness. The article claims do not incorporate all of the limitations that are required by the process claims, rendering a restriction proper.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Andrew Siminero on June 25, 2003 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-39 and 53. Affirmation of this election must be made by applicant in replying to this Office action. Claims

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40-52 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 2-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-4 recite the limitations "UVA340". This limitation makes the claims indefinite since UVA340 is a trademarked product, which is used to identify a particular material (e.g. light radiation). If a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of the 35 U.S.C. 112, second paragraph. Ex parte Simpson, 218 USPQ 1020 (Bd. App. 1982).

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Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1-13, 17-34, and 53 are rejected under 35 U.S.C. 102(a) as being anticipated by United States Patent no. 6,103,363, Boire et al.

Boire et al disclose a substrate with a hydrophilic photocatalytic film containing titanium oxide. The coating can have a “more or less smooth surface”. A smooth surface can be hydrophilic with the hydrophilicity increasing with the surface roughness. The surface roughness can range from approximately 2-20 nm with a contact angle with water being less than 1°, meeting the requirements of claims 1-5, (column 4, lines 37-64).

Boire et al also disclose that the thickness of the coating varies between 5 nm – 1 micron ($50 \text{ \AA} - 10^4 \text{ \AA}$), meeting the requirements of claims 6-10, (column 5, lines 12-13). Different materials, along with titanium dioxide, can be used for the photocatalytic coating such as silicon oxide, tin oxide, zirconium oxide, or aluminum oxide, meeting the requirements of claims 11-12, (column 2, lines 41-51). The titanium oxide can be present in a partially crystalline/amorphous state wherein the crystalline phase can be anatase, rutile, or anatase/rutile, meeting the requirements of claim 13, (column 2, lines 5-21).

Boire et al further disclose that one or more layers may be located between the substrate and the photocatalytic coating. The layers may have anti-static, thermal, or optical functions as well as forming a barrier to the migration of certain elements originating in the substrate, meeting the requirements of claims 21-22 and 33-34, (column 5, lines 20-37). The coating can be formed on the surface of float glass wherein one of the surface would have tin present on one side, meeting the requirements of claim 23, (column 7, lines 30-34).

Many different surfaces and configurations can have the photocatalytic coating deposited thereon. In particular, the coating can be placed upon double glazing wherein the coating can be placed on the external side and/or the internal side (face 1 and/or on face 4), as well as automotive windows, and building windows, meeting the requirements of claims 26-31, (column 6, lines 42-64).

When the structure recited in the reference is substantially identical to that of the claims, the claimed properties or function are presumed inherent. *MPEP 2112.01*. Because the prior art exemplifies the applicant's claimed substrate with a photo-induced, which is taken as meaning the same as photocatalyst, hydrophilic coating, the claimed physical properties relating to the photocatalytic activity and the visible light reflectance of the coating are inherently present in the prior art. As such, the addition of the claimed physical properties to the claim language fails to provide patentable distinction over the prior art absent an evidentiary showing to the contrary, meeting the requirements of claims 17-20 and 32.

Claims 1, 24-25, and 53 are product by process claim wherein the patentability of the product does not depend on its method of production. "If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *See MPEP 2113*. As such, the

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process limitations within claims 1 and 53 do not provide patentable distinction over the prior art absent an evidentiary showing to the contrary.

10. Claims 36-39 are rejected under 35 U.S.C. 102(e) as being anticipated by United States Patent no. 6,238,738, McCurdy.

McCurdy discloses a titanium oxide coating on a float glass substrate wherein the coating can be deposited on the substrate while the substrate is in the float bath section, meeting the requirements of claim 36, (column 6, lines 21-41). In addition, the thickness of the coating deposited over the hot glass has a deposition rate of 130 Å/second, (column 5, lines 17-20), with Example 1 having a thickness of 490 Å, meeting the requirements of claims 38 and 39, (column 9, Table 1).

It is commonly known in the art that titanium oxide is a photocatalytic hydrophilic material. When the structure recited in the reference is substantially identical to that of the claims, the claimed properties or function are presumed inherent. *MPEP 2112.01*. Because the prior art exemplifies the applicant's claimed photo-induced hydrophilic structure, the claimed physical property relating to the photocatalytic activity is inherently present in the prior art. As such, absent an evidentiary showing to the contrary the addition of the claimed physical property to the claim language fails to provide patentable distinction over the prior art.

Claim 39 is product by process claim wherein the patentability of the product does not depend on its method of production. "If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *See MPEP 2113*. As such, the process limitations within claim 39 do not provide patentable distinction over the prior art absent an evidentiary showing to the contrary.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 1-35 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent no. 5,897,958, Yamada et al in view of United States Patent no.4,193,236, Mazzoni et al further in view of United States Patent no. 6,103,363, Boire et al.

Boire et al disclose a substrate with a hydrophilic photocatalytic film containing titanium oxide. The coating can have a "more or less smooth surface". A smooth surface can be hydrophilic with the hydrophilicity increasing with the surface roughness. The surface roughness can range from approximately 2-20 nm with a contact angle with water being less than 1°, (column 4, lines 37-64). The thickness of the coating varies between 5 nm – 1 micron (50 Å - 10⁴ Å), (column 5, lines 12-13). Different materials, along with titanium dioxide, can be used

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for the photocatalytic coating such as silicon oxide, tin oxide, zirconium oxide, or aluminum oxide, (column 2, lines 41-51). The titanium oxide can be present in a partially crystalline/amorphous state wherein the crystalline phase can be anatase, rutile, or anatase/rutile, (column 2, lines 5-21). One or more layers may be located between the substrate and the photocatalytic coating. The layers may have anti-static, thermal, or optical functions as well as forming a barrier to the migration of certain elements originating in the substrate, (column 5, lines 20-37). The coating can be formed on the surface of float glass wherein one of the surface would have tin present on one side, (column 7, lines 30-34). Many different surfaces and configurations can have the photocatalytic coating deposited thereon. In particular, the coating can be placed upon double glazing wherein the coating can be placed on the external side and/or the internal side (face 1 and or on face 4), as well as automotive windows, and building windows, (column 6, lines 42-64). Boire et al do not specifically disclose that the surface roughness is below 1 nm, that the coating is substantially non-porous, or that the functional coating is placed on a second surface of the float glass strip.

Boire et al disclose that the photocatalytic coating can be more or less smooth and that a little roughness increases the photocatalytic aspects of the coating. In addition, the porosity of the coating is dependent to an extent on the surface roughness of the coating, (column 4, lines 37-55). Based upon the teachings of Boire et al, too rough a surface is a penalty while a smooth surface will still exhibit photocatalytic functions. As such, it would have been within the skill of one in the art at the time of invention to optimize the surface roughness of the coating through routine experimentation to obtain a coating that while having a certain roughness that will increase the wetting properties yet will not cause incrustation or accumulation of dirty marks on the film.

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While Boire et al do not specifically disclose that the substrate has a photocatalytic film on one surface and a functional coating on the second surface, it is disclosed that different layers can be applied to the substrate. In addition, the coating can be applied to the interior of windows. As such, it would be with the skill of one in the art through routine experimentation to determine the appropriate placement of additional coatings for the desired final product. For example, the photocatalytic coating can go on an interior vehicle window with a solar control layer on the second surface to protect the interior of the vehicle.

Because the photocatalytic coating exhibits antibacterial, stain proofing, deodorant, or antifogging effects without impairing the appearance or outlook of a glass substrate and it is known in the art to place the coating on glass, it is within the skill of one in the art to determine the most appropriate surface upon which to place the coating without undue experimentation in order to obtain a coated surface that is easy to clean, per the user's preference as to placement of the coating.

Claims 1, 24-25, and 50 are product by process claims wherein the patentability of the product does not depend on its method of production. "If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *See MPEP 2113*. As such, the process limitations within claims 1, 39, and 50 do not provide patentable distinction over the prior art absent a showing of unexpected results between the claimed invention and the prior art.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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United States Patent no. 5,897,958, disclose a titanium oxide photocatalyst used as a coating on substrates.

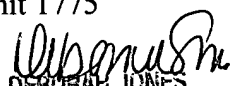
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn A. Blackwell-Rudasill whose telephone number is (703) 305-9741. The examiner can normally be reached on Monday - Thursday; 6:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah Jones can be reached on (703) 308-3822. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gwendolyn A. Blackwell-Rudasill
Examiner
Art Unit 1775

GBR
gof


DEBORAH JONES
SUPERVISORY PATENT EXAMINER